



EMERGENCE AND HOLISM
IN ARCHITECTURE:

HOW DOES ARCHITECTURE CONVEY THE INEFFABLE?

EMERGENCE AND HOLISM IN ARCHITECTURE:

How Does Architecture Convey the Ineffable?

AR2A011 History Thesis

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Figure 1. By author, 2019, View to internal courtyard at La Tourette, photograph

Architecture is a blend between art and science. It is a science in the way that the design solution has to work logically, structurally and rationally in terms of the organisation of space in relation to its function. There are many different design solutions to an architectural brief and the creative nature of working on the different rationally viable solutions is where the practice of architecture addresses the intangible and artistic side of the discipline. This nature of architecture being constrained to the functionality and pragmatism of spatial layout and structure is partially why Arthur Schopenhauer considered architecture as the lowest form of art in terms of his hierarchy of expression of the will.¹

This condition can be viewed as a constraint and disadvantage, but it is also what makes architecture powerful. Architecture as art, takes initiative and is active. A viewer always has expectations and has to make a specific conscious choice of wanting to go see a painting or listening to music, but with architecture, when it is well designed and all its factors and elements works in harmony, the viewer encounters it without expectations and is directly immersed in it, experiencing it; Architecture's medium of expression is space itself.

This form of expression ranges from something as simple as a well-designed space to spaces that evoke feelings associated with the sublime. The method of reaching the upper bounds of this range in architecture will be the focus of this paper. At what point does a brick become a wall? At what point does an arrangement of walls become something that is sacred? Where does the transition happen? All of these questions are relevant to the aim of paper.

This paper aims to investigate how architecture creates ineffable spaces - using materials that are very much of this world to create something that is intangible. A closer look will be taken at religious spaces, specifically Le Corbusier's 3 churches: Ronchamp Chapel, La Tourette, and Firminy Vert. The building type was chosen because religious spaces in architecture has a special requirement not to only function well, but to also be a place fit to be an homage to God. The church, in theory, acts as a mediator between heaven and earth; it acts as a liminal space. This requirement to be sacred makes it a fitting typology to study for this essay.

Sacred Concrete by Inge Linder-Galliard & Flora Samuel is a key literary source to provide the background and give context to the architectural intentions of Le Corbusier's churches I engage in. Other books such as Poetics of Space by Gaston Bachelard, The Eyes of the Skin by Juhani Pallasmaa and Atmospheres by Peter Zumthor inform my approach to understanding how users perceive and understand space. Poetics of Space specifically talks from a psychological angle on experiencing and perceiving architecture, touching on memory and associations people make when experiencing space. A field research provided me with necessary insight into the materiality of the case-studies and the dynamics of their use. This visual analysis relies on the photographic material I produced during the field research as well as on orthogonal drawings of the building (part of which will be taken from secondary sources, and others will be drawn by myself) will then be investigated through the lens of Bachelard's, Zumthor's and Pallasmaa's ideas with the aim of finding the distinctive or at least identify contributing elements that makes religious architecture befit as a liminal space mediating heaven and earth.

1. Arthur Schopenhauer, *The World as Will and Idea* (Createspace Independent Publishing Platform, 2016), 283-284.

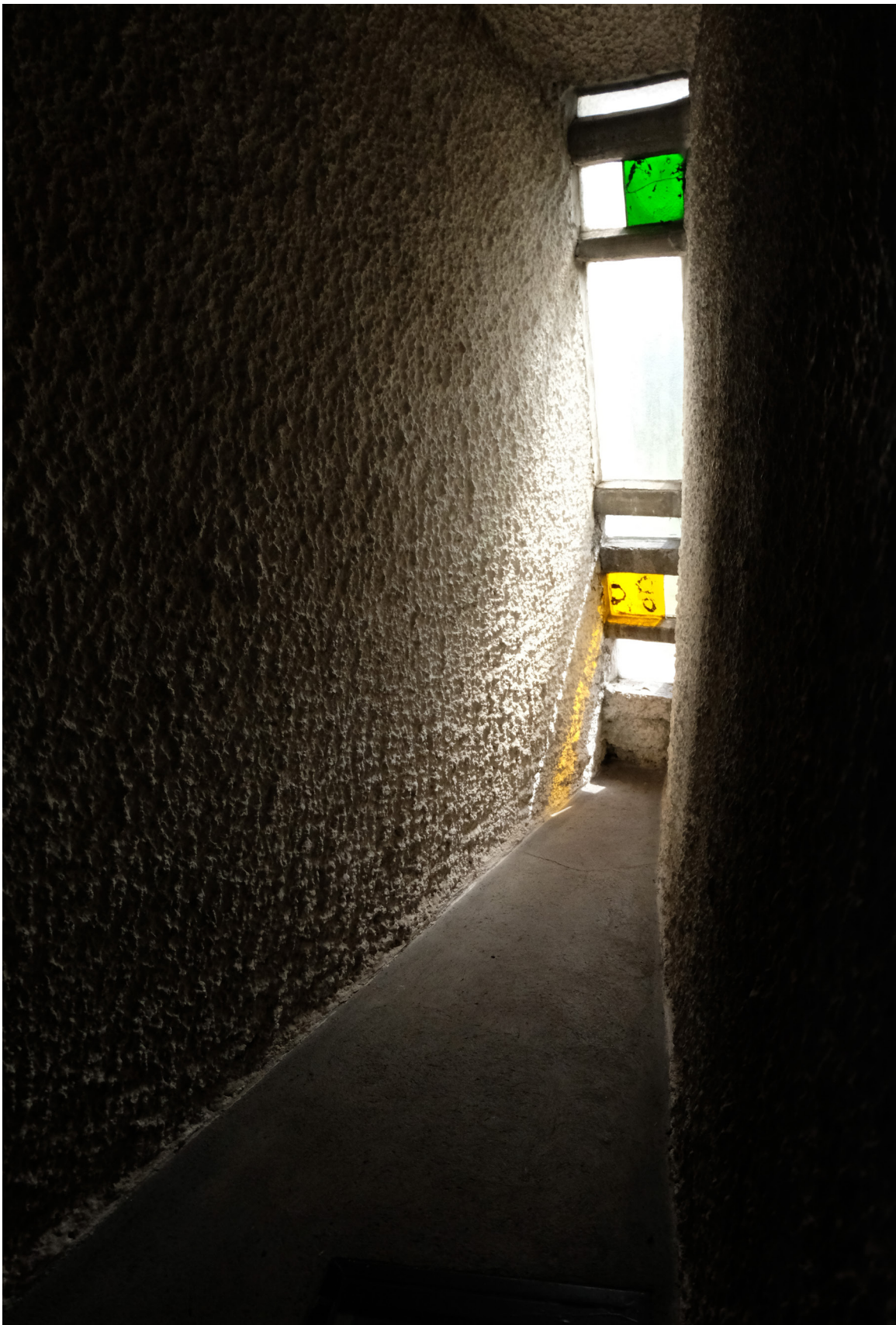


Figure 2. By author, 2019, Stained glass on openings on South facade in Ronchamp, photograph

MOTIVATION AND INTEREST

Natural light has always been a topic that I found interesting in architecture. To me, the practice of architecture itself is designing around and with the Sun in mind. It is unfortunate that most building types (such as offices, hospitals, houses, etc.) require natural light to take a background role in order for it to function in a practical way. In this typical scenario the consideration of the Sun in relation to a building is to get as much of it in a diffused way. This is still interesting and meaningful, however it places the priority and consideration of natural light lower in the hierarchy. It is also often overshadowed by other factors such the façade design, plan, circulation, etc. partly because achieving diffused daylight is flexible and manageable through a variety of ways.

Natural light, however, is capable of taking much more than just a background role. In a counter-intuitive way this occurs when there is a scarce amount of it. Only with an abundance of darkness and a measured amount of sunlight can we then appreciate the ethereal character of natural light. This is what can be experienced in the three churches of Le Corbusier. There are a lot of different perspectives on what Le Corbusier was trying to express through each of the churches. Having visited the three churches, I feel that natural light was really prominent in all three works, contributing to the creation of a sacred space.

This elaborate design using light, treated as a material instead of as an add-on contributes a unique atmosphere that has an emergent property when joined together with a collection of architecture devices.

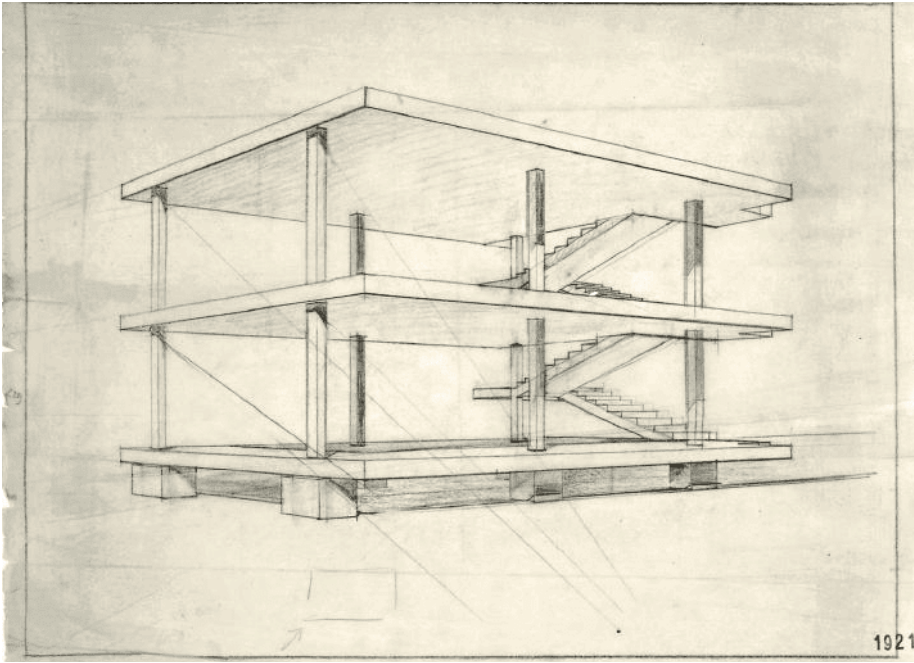


Figure 3. Le Corbusier, Dom-ino House, 1921, sketch, <https://afasiaarchzine.com/2014/06/le-corbusier/>.



Figure 4. Le Corbusier, Villa Savoye, 1929, photograph, <https://www.archdaily.com/84524/ad-classics-villa-savoye-le-corbusier/5037e69428ba0d599b00035d-ad-classics-villa-savoye-le-corbusier-image>.



Figure 5. Le Corbusier, Model of plan Voisin, 1964, photograph, https://www.researchgate.net/figure/This-scale-model-of-Le-Corbusiers-Plan-Voisin-marks-the-turning-point-where-city-plans_fig1_26643931.

THE ARCHITECT

The three churches were designed by Le Corbusier (1887- 1965). As one of the prominent Modernist architects, Le Corbusier is known for his numerous contribution to the build environment. He was involved not just in architecture, but also in urban planning. In architecture, one of the notable things he achieved was being one of the first architects to work with reinforced concrete using modern techniques¹. His fascination with concrete could be traced to the Dom-Ino House in 1914². In its essence, it is simply 3 concrete slabs supported by 6 columns, however for its time, it was revolutionary as it meant for a floorplan that is free from the structural limitations, allowing the architect to divide the floor plan in any way. The same goes for the façade, which is also freed from structural limitations.

This idea is further refined by Le Corbusier in the form of the famous manifesto “Five points towards a new architecture”³. The points include requiring a grid of reinforced concrete for structure instead of load bearing columns, the free (from structural constraints) design of the ground plan, the free design of the façade, large horizontal windows (much more achievable due to the absence of load bearing walls), and a flat roof. This manifesto describes his “New Architecture”, which is based around expressing the structural freedom and therefore design freedom afforded by the modern method of construction using reinforced concrete. One building that Le Corbusier designed, which is an ideal tangible manifestation of his five points was his famous Villa Savoye.

Le Corbusier was also concerned about city planning. His early attempt at city planning was the Ville Contemporaine model in 1922, which featured tall office towers, with lower residential buildings and parks⁴. Having been set in a hypothetical place, the plan did not garner enough attention. His next proposal, the infamous Plan Voisin (1925) took a much more controversial approach, where he proposed the demolition of a large portion of central Paris. To replace them he proposed 60 towers with the form as a crucifix in plan, surrounded by park land. The proposal had the vision of fully controlling and neatly allocating space and lanes for each method of transport. It included multi-level transportation hubs, airlines landing between skyscrapers, and the segregation of the pedestrian in order to create a large road network.⁵ Plan Voisin was not built, however its notoriety garnered the attention he wanted and allowed him to continue developing his ideas.

After WWII, Le Corbusier was finally able to realise the ideas he developed, but could not realise because of the war. Having been badly damaged during the war, the new minister of reconstruction at Marseille agreed to fund a large building for mass housing which allowed Le Corbusier’s “Unité habitation de grandeur conforme” to be built in Marseille.⁶ He gave the project the name Cité Radieuse, which was the name of his previously theoretical project before the war. The overarching idea for this project is a large reinforced concrete shell where modular apartment ‘blocks’ would ‘slot’ into. This project also featured the ‘Modulor’, Le Corbusier’s own proportion system, which was an attempt to bridge between the imperial and the metric system.⁷ Later, the Modulor was used for the setting out of many of his buildings.

Having mentioned some of Le Corbusier’s notable work, it can be said that the architect is very much concerned with innovation, efficiency, standardisation, etc. in most of his works. These works are also what would be first taught to people starting to learn about Le Corbusier in the context of being a prominent Modernist architect, as it is arguably the defining projects, to many people, when it concerns Le Corbusier. The three churches however, are quite different from the rest of the architect’s works. It is not as polished, strict, and clean cut like the rest of the projects in Le Corbusier’s portfolio.

1. Le Corbusier, *Lettres à ses maîtres: Lettres à Charles L’Eplattenier*, 2002, 33.

2. Tim Benton, *The Villas of Le Corbusier and Pierre Jeanneret 1920-1930* (Birkhäuser, 2007).

3. Ulrich Conrads, *Programs and manifestoes on 20th-century architecture* (MIT Press (MA), 1970), 99-101.

4. Guillemette Morel-Journel, *Le Corbusier: Construire la vie moderne*, 2015, 98.

5. Morel-Journel, *Le Corbusier: Construire La Vie Moderne*, 100.

6. Anne Bony, *L’architecture moderne: Histoire, principaux courants, grandes figures*, 2012, 143.

7. Le Corbusier, *The Modulor and Modulor 2* (Birkhäuser, 2004), 131.



Figure 6. By author, 2019, Ronchamp, photograph

"I give you this chapel of dear, faithful concrete, shaped perhaps with temerity but certainly with courage in the hope that it will seek out in you (as those who will climb the hill) and echo of what we have drawn into it."

- Le Corbusier

THE PILGRIMAGE CHAPEL OF NOTRE DAME DU HAUT

The pilgrimage chapel of Notre Dame Du Haut at Ronchamp was built in 1955. It is located on top of a hill overlooking Ronchamp, an ex-mining town. With this project, merely from looking at the highly sculptural form of the building, it was quite apparent that it was different from Le Corbusier's or even any other projects. Its shape is complex, featuring dramatically different four elevations with the iconic massive curved roof, which Le Corbusier referred to as an "object that evokes a poetic reaction", being the constant. In plan, the walls curve in many directions varying in thickness and detail, reflecting the amount of thought and elaboration in the design. Based on the field research I have done on this building, I am of the opinion that the experience and understanding of the essence of this building is one of the hardest to convey through drawings and images. The architect has created a truly 3 dimensional space (as opposed to a building almost exactly an extrusion of the walls) that is best interpreted when being present in the building.

This building is included in the case study as it was designed under an interesting premise in the sense that Le Corbusier, was not religious. He even wrote that "the requirements of religion have little effect on the design" on Ronchamp. Instead "the form was an answer to the psycho-physiology of the feelings."¹ Despite all this, the scheme feels much like a sacred space and reasonably succeeds in invoking a contemplative state to the visitors without relying into the liturgy to achieve it.

1. Le Corbusier, *Le Corbusier: oeuvre complète 1946-1952*, 1953, 52.



Figure 7. Mary Gaudin, La Tourette, 2018, photograph, <https://divisare.com/projects/380530-le-corbusier-mary-gaudin-la-tourette#lg=1&slide=0>.

THE MONASTERY OF SAINTE MARIE DE LA TOURETTE

The monastery of Sainte Marie de La Tourette was built in 1961, located at L'Abresle, which is 25 kilometres from Lyon. This monastery was designed for the Dominicans, which is an order within the Catholic church. Standing on a slope and framed in woodlands, the building stands fortress-like in character. It is defensive, protecting the life and activities carried out inside of it. This is reflective of the nature of the monastic life that the Dominican monks carry out inside the monastery, sealing the outside world out and looking inwards in contemplation. From the outside, the building is strongly anchored to the site by the large columns supporting it. The building also features the 5 points towards a new architecture that Le Corbusier set out in his manifesto earlier in his life. The building houses 94 cellular accommodation on the top two floors, linked by 3 flights of stairs. The communal spaces, the church, the refectory and other spaces are located below this. Being a building that also features living quarters, Le Corbusier also used the modulator to proportion it.¹

Compared to Ronchamp's freer form, La Tourette is orthogonal and strict. This is quite reflective of the nature of the client. Being a large Catholic order, to be a Dominican monk requires discipline from the desires of the pleasures of life in order to focus on the mission of the order, which is spreading the word within a communal setting. This dichotomy of introversion and extroversion is present in La Tourette and results in the separation of the programmes through different floors as mentioned before. The expression of the monastic lifestyle is done through the harshness of the material and the bare concrete, especially on the upper floors designated for the living quarter of the monks, whereas the lower floors are designed as a delicate balance of individual and community facilities. All of this is contained and touched by the light and geometry designed by the architect.²

1. Flora Samuel and Inge Linder-Gaillard, *Sacred concrete: the churches of Le Corbusier*, 2013, 120.

2. Samuel and Linder-Gaillard, *Sacred Concrete: The Churches of Le Corbusier*, 153.



Figure 8. By author, 2019, St. Pierre exterior, photograph

SAINT PIERRE

The parish church Saint Pierre located at Virminy Vert started construction in 1973 and was finished in 2006. In Le Corbusier's *Oeuvre Complète*, he wrote that "after Ronchamp and La Tourette, represents a third, new type of church" when referring to St Pierre.¹ It has been interpreted that at Ronchamp the main theme was opening up the mystery of pilgrimage site, with La Tourette it was the architect's expression of a coherent religious ensemble (community and monastic life joined) and finally with Firmigny, its overarching idea was to dilate the spiritual space to the whole city, it does this in its architecture, communicating clearly to the visitor that it is a place of influence and radiance. Its construction started after Le Corbusier has passed away. The project stalled due to lack of funding and it commenced again in 2003 when sufficient funding was raised so that José Oubrerie, who had worked with Le Corbusier on the church in 1960s could complete it.²

St Pierre was to take the form of a "squared prism" with a parabolic cone mounted on it. This was the first to be built in the construction sequence, and as funding stopped, it remained an abandoned bunker for 25 years before construction resumed. Two skylights provide overhead lighting for the sanctuary with a third one on the west facing side of the building. The entire building was done out of reinforced concrete, untreated on the exterior walls. Similar to the way Ronchamp was constructed, many interior walls, ceilings, doors and "accessories" were to be painted with bright colours. This however, was left unspecified as final decision on these matters would have been made by Le Corbusier during the building process itself. As construction initiated after his death however, Oubrerie built the church based on his best educated guess as to what they might have been.

1. Willy Boesiger, Oscar Stonorov, and Max Bill, *Le Corbusier et Pierre Jeanneret et al. – Oeuvre complète en 8 volumes / Complete Works in 8 volumes / Gesamtwerk in 8 Bänden* (Birkhäuser, 2006), 137.

2. Cocagnac and Capellades, "Un projet d'église paroissiale de Le Corbusier," *L'Art Sacré*, November 1964, 3-4, 3.

Figure 9. By author, 2019, St. Pierre interior, photograph

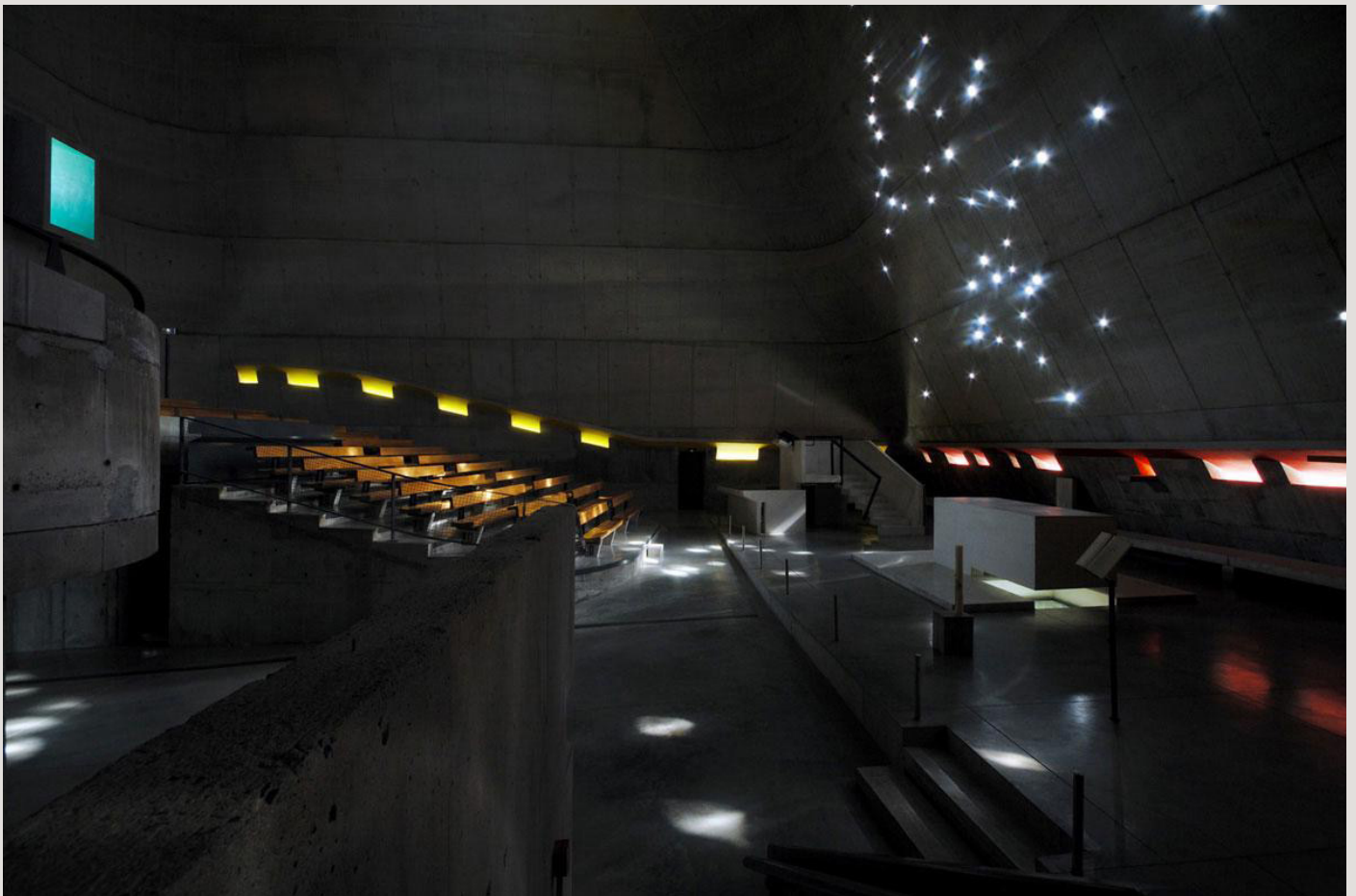




Figure 10. By author, 2019, La Tourette interior, photograph

In the context of the three churches of Le Corbusier, natural light is not only a dominant part in the projects, but it could also be argued that the churches were built in order to explore the extents of the possibilities regarding expressing natural light in a building. There has been a number of speculation regarding Le Corbusier's complicated relationship with the catholic church; some sources conclude that the architect has a soft spot for catholic orders that have a turbulent relationship with Rome, such as the Dominicans. However I also see the validity in the argument that Le Corbusier takes this even further in the way that his design results in the church and the liturgy constantly being subverted in his architecture. In subtle but undoubtedly present ways, Le Corbusier diverts attention away from the liturgy.¹ This is an interesting phenomena, as generally, during the design of a church, the client (senior members of the Catholic church) would be very particular and careful about how everything is laid out, especially when it concerns the effects on the altar, orientation and other important imageries.

This subversion of the liturgy seem to be present in all of Le Corbusier's churches. Starting with St. Pierre, Firminy, which is the most subtle 'offender' out of the three, we can see that the church features a crucifix that does not feature the body of Jesus on it. This may be subtle and seemingly insignificant to the visitor, but to the Catholic church, it is quite significant as a crucifix without the body is symbolic of a protestant church. Furthermore, the design of the crucifix is thin and sleek. This, juxtaposed with the numerous amount of 'active' natural light in the building results in the users being more focused on ethereal qualities of light instead of the liturgy.

Another notable defiance against the Catholic church is the design of the altar. Typically the church would prioritise the altar, the crucifix and the tabernacle to be the main attention in the building. In many cases these three elements are centred and the entire church would even be mirrored about an axis that strikes through these elements. The church would even be as careful as to scrutinise temporary installations in the building and to always make sure it is not visually 'disrespecting' the altar. At Firminy, the altar is asymmetrical and cut into to reveal lighting from below. This might be an aesthetic choice in order to fit with the design language of the scheme, however from the lens of the liturgy, the altar looks fragile and flimsy instead of a grounded, solid centre focus of the church.²

In La Tourette's chapel, at first glance the chapel design seem to be quite conventional featuring a rectangular plan with a symmetrical pew design about a central axis marked by the altar. Upon entering, descending from the cloister, the user arrives just on the threshold between the pews and the high altar. The altar is on a raised platform, which is a 'plausible argument' for showing the significance of the element. However, behind the altar, is a door that leads directly outside of the building. This door leading to the outside is of lower significance in the eyes of the church. However, it features a tall window angled in a way which lets an abundance of daylight in. In effect, with the dramatic drop in luminosity, the first thing a visitor notices immediately after entering the dark room is not the main altar, instead the eye is naturally drawn to the large column of light, which takes centre stage and commands all the attention of the visitor.

1. Henry Plummer and Le Corbusier, *Cosmos of Light: the sacred architecture of Le Corbusier*, 2013, 3-4.
2. Plummer and Corbusier, *Cosmos of Light: The Sacred Architecture of Le Corbusier*, 127.



Figure 11. By author, 2019, Ronchamp interior, photograph

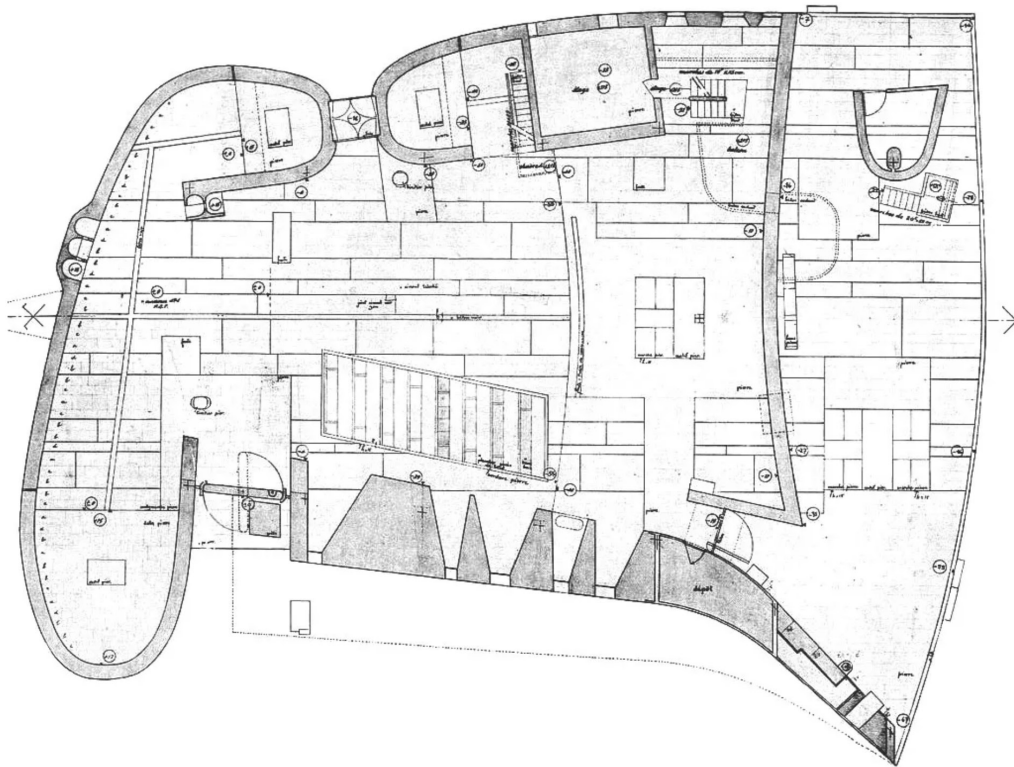


Figure 12. Le Corbusier, Ronchamp plan, 1955, drawing, <https://archeyes.com/ronchamp-chapel-le-corbusier/>.

In Notre Dame du Haut, Ronchamp the architect made yet more unconventional design decisions for the building. It is similar to the chapel in La Tourette in the way that there is a large column of light above a door behind the altar, again subverting it; This time the way that the pews are designed also plays into this spirit. Even though the pews are orientated technically facing the altar when visitors are sitting, the pews are in the shape of a parallelogram, which in plan, directionally looks like it is pointing to the mentioned column of light instead of the altar.

The placement of the virgin Mary in the church is also particular. In a Catholic church, it is quite common to find a space dedicated to pay homage to the virgin Mary. This is one of the distinctive features distinguishing the Catholic church and a protestant church. Despite this tradition of paying homage to the virgin Mary, it is normally done in an alcove with a statue depicting her, often not visible in the main part of the church. However in Ronchamp the statue is placed in a cut-out of a wall located above the altar, a very atypical place. Furthermore, behind the statue is a piece of clear glass without any solar shading, which in result allows plenty of light in, rendering the statue almost invisible from the dark interior of the church. Just behind the wall of the main altar however, is an outdoor chapel. When using the outdoor chapel space, this window reveals the statue.¹

The relevance between the constant subversion by Le Corbusier and this essay discussing the devices architecture uses to create a sacred space may not be obvious. However, Le Corbusier's actions make his churches an even more fitting case study. It suggests that the feeling of sacredness is not something that relies on faith itself. The three churches is an example where the architect is actively not interested in emphasising the liturgy of the church, and yet the spaces created still feels sacred. They are an example of a sacred space which do not rely heavily on the faith of the religion (and the various imagery and rituals it comes with). It suggests that sacredness is an emergent property from architectural devices, allowing even the secular observer to also feel its presence and significance.

1. Henry Plummer and Le Corbusier, *Cosmos of Light: the sacred architecture of Le Corbusier*, 2013, 33.



Figure 13. Henry Plummer, Upward view of climax of sunset as golden light grazes over the tactile ceiling, 2011, photograph, <https://www.archdaily.com/597598/light-matters-le-corbusier-and-the-trinity-of-light/54da5564e58ecec16000012-upward-view-of-clima>.

LIGHT:CENTRE STAGE

Figure 14. By author, 2019, Light entering La Tourette , photograph



Le Corbusier did not subvert the church's liturgy on a whim. My observation is that the attention is always directed towards a range of natural light of different quality. Natural light is normally something that users take for granted due to its abundance in a typical building. However, all three churches are significantly darker than a typical building. This abundance of darkness creates a blank canvas, which allows the architect to treat natural light as a material instead of a one dimensional quality of space (i.e. merely a measure of the brightness of a room). The mere inverse (of the typical scenario, which would be an abundance of darkness and scarcity of light) would have been enough to create a space that is special; However, Le Corbusier does even more in his churches. I almost see the three churches built as a series of collection of buildings with the theme of natural light, each assigned with different focuses.

With La Tourette being a monastery and not only a church like Ronchamp and Firminy, the emphasis of natural light is not as intense as the other two churches. La Tourette takes a more subtle and quiet approach in its expression of natural light. This may have to do with the intended audience of the building being mainly the monks living in the monastery, whereas in Ronchamp and Firminy it is more aimed at the general public. The monastery designed for the Dominican order is quite introverted, and almost fortress like. It feels defensive from the outside and is inward looking, but on the inside it is calm and is a place that is fit and encourages contemplation. Although the church is part of the monastery, it is distinctly separated from the rest of the scheme in terms of plan, massing and treatment by the architect. Despite this, a lot of the mentioned overarching ideas of the monastery are carried through in the church.

In comparison to Ronchamp and Firminy, the space inside the church is significantly darker. This project is the closest to the concept of purely inverting the ratio of light and darkness in a space. This makes the visitor of the building to be sensitive when light actually does come through. This is a major reason why the aforementioned column of light behind the altar of the church at La Tourette is so dramatic. Aside from this, other consistent and quiet sources of light in the dark church are the horizontal slits of light behind the pews, which filters in indirect light from the outside. Le Corbusier also designed "light cannons" which have an elaborate shape when viewed from the exterior of the building. The duality of the complex shaped light cannon in order to achieve the still, filtered, directed light it produces in the building can be found both in different shapes for the sacristy and the crypt of the church.¹

Throughout the day, the natural light inside the church at La Tourette is calm and consistent, up until towards the end of the day, where light comes through the relatively thin horizontal opening on the west façade. A line of light touches the north and east wall, and as the sun slowly sets, the line moves slowly upwards up until it peaks and touches the slightly angled roof of the church illuminating the plane with the warm afternoon light, expressing the tactility and texture of the pre-fabricated concrete ceiling.

This introspective space with a constant, quiet, tranquil atmosphere for the majority of the day, only to be broken at the end of the day is the distinctive characteristic of La Tourette's church from the perspective of light. A dignified, mysterious, sacred space, peaking and providing a sudden directness and hope at the end of each day.²

1. Henry Plummer and Le Corbusier, *Cosmos of Light: the sacred architecture of Le Corbusier*, 2013, 104.
2. Plummer and Corbusier, *Cosmos of Light: The Sacred Architecture of Le Corbusier*, 118.



Figure 15. By author, 2019, Exterior view of La Tourette's sacristy , photograph



Figure 16. By author, 2019, Exterior view of La Tourette's crypt, photograph



Figure 17. By author, 2019, View from nave to sacramental chapel at La Tourette , photograph



Figure 18. Henry Plummer, La Tourette view looking east as solar line bends around the far end wall, 2011, photograph, https://www.archdaily.com/597598/light-matters-le-corbusier-and-the-trinity-of-light/54da5560e58ecec1600011-view-looking-east-as?next_project=no.



Figure 19. By author, 2019, Grand chapel at Ronchamp, photograph

At Ronchamp, we can see the importance Le Corbusier places on natural light early on in the design through the fact that the whole building is perfectly aligned to true North. In a typical building design, this would result in having a simple shading solution for the building. However the building is not orientated this way for that reason, rather it is done for a much more elaborate reason. Its orientation allows for a very specific control and the demarcation of the passage of time, done through natural light. Almost like a theatre play, the 'opening sequence' starts at dawn, where the Sun rises from the east, illuminating the red curved wall of the morning chapel through its East facing opening at the top.

The morning Chapel is one of three small chapels in the buildings which all seem to be similar in design, mainly varying in orientation and size. The morning chapel is also special in the way that it is the only one coloured in red (This has also been interpreted as a metaphor for birth).¹ A mirror of this chapel is the evening chapel, located opposite and white in colour, with an opening facing West, illuminated starting from the afternoon.

Lastly is the grand chapel, which faces North; In a typical building design process, unless the building programme is specific and needs indirect lighting (such as a studio, art gallery or a museum), the North facing façade does not have the most favourable reputation in western architecture. However, in the case of Ronchamp and its three internal chapels, the architect has designed the grand chapel to be North facing. Being the grand chapel, it is the largest of the three. Surprisingly, despite its 'unfavourable' orientation, the indirect sun and the larger aperture of filtered light at the top results in soft, even light, which can be clearly seen due to the texture of the wall. The gradient it creates and the softness of the daylight coming through is easily felt when present in the building. Where the morning and evening chapel is much more 'active' and dynamic, always sensitively to the movement of the cloud obscuring the sun, the grand chapel presents light with a presence that is soft and fluid, almost like a still waterfall. Being in the presence of such light was quite a special experience, which I felt sent visitors alongside myself to a contemplative state and more in tune with the ineffable.

As midday approaches, the sun shines directly on the well-known South wall of Ronchamp. At this time of the day, the different colours from the stained glass shines on the floor of the church. The depth and weight of the wall can be clearly read and a clear juxtaposition with the lightness and brightness of the incoming light becomes apparent. When seated at the pews, this wall of light is directly to the right of the visitors; With the amount of openings, different apertures, the different colours of hand-made glass inserted to the openings, and the intensity of the sunlight, it becomes something difficult to ignore. The liturgy of the church suddenly becomes small and uninteresting in comparison.

Le Corbusier also leaves a gap between the walls of the building and the roof. This might also be a tectonic expression meant to create a feeling of gracefulness of a heavy massive object held up by minimal contact, almost floating in the air, but when the time of the year is just right, this also lets direct sunlight in the building adding even more dynamism in the church.

The light theatrics at Ronchamp ends with the warm western afternoon sunlight shines on the evening chapel.

1. Henry Plummer and Le Corbusier, *Cosmos of Light: the sacred architecture of Le Corbusier*, 2013, 60.

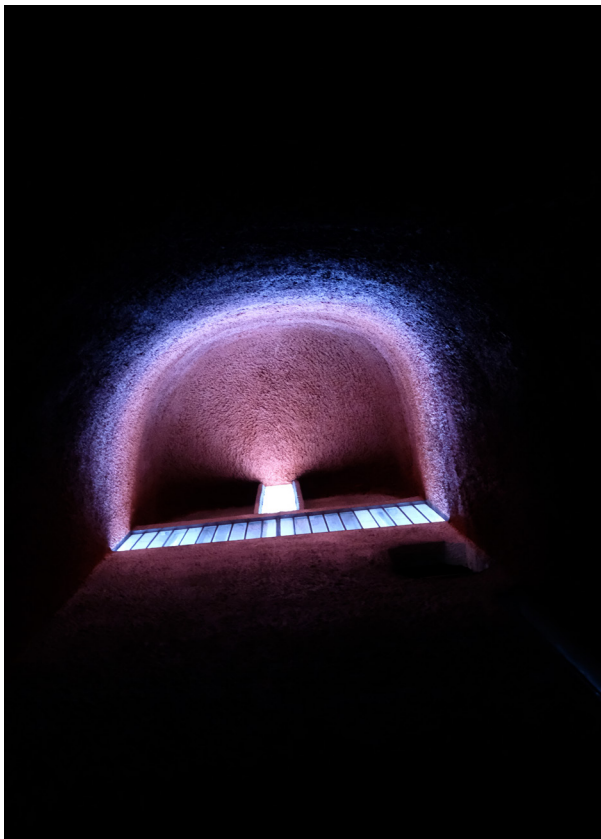


Figure 20. By author, 2019, View looking up from morning chapel at Ronchamp, photograph

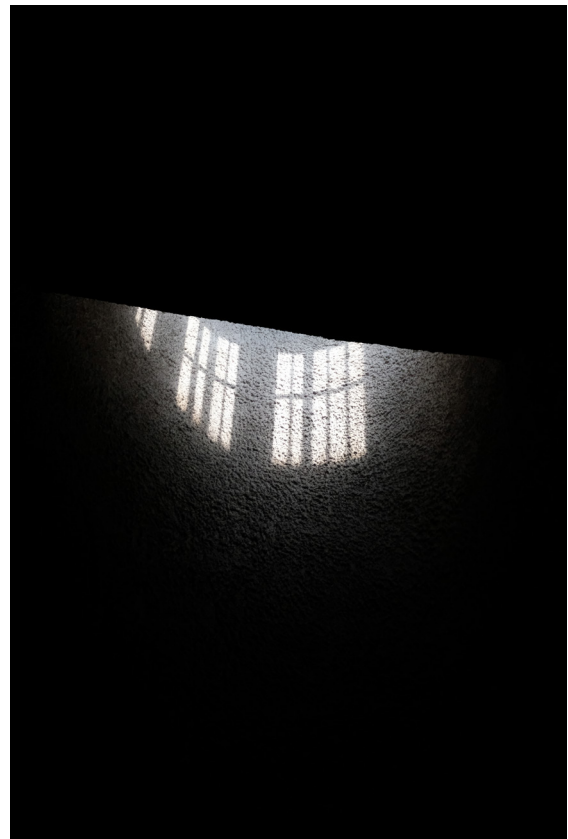


Figure 21. By author, 2019, View looking up from evening chapel at Ronchamp, photograph



Figure 22. By author, 2019, South wall at Ronchamp, photograph

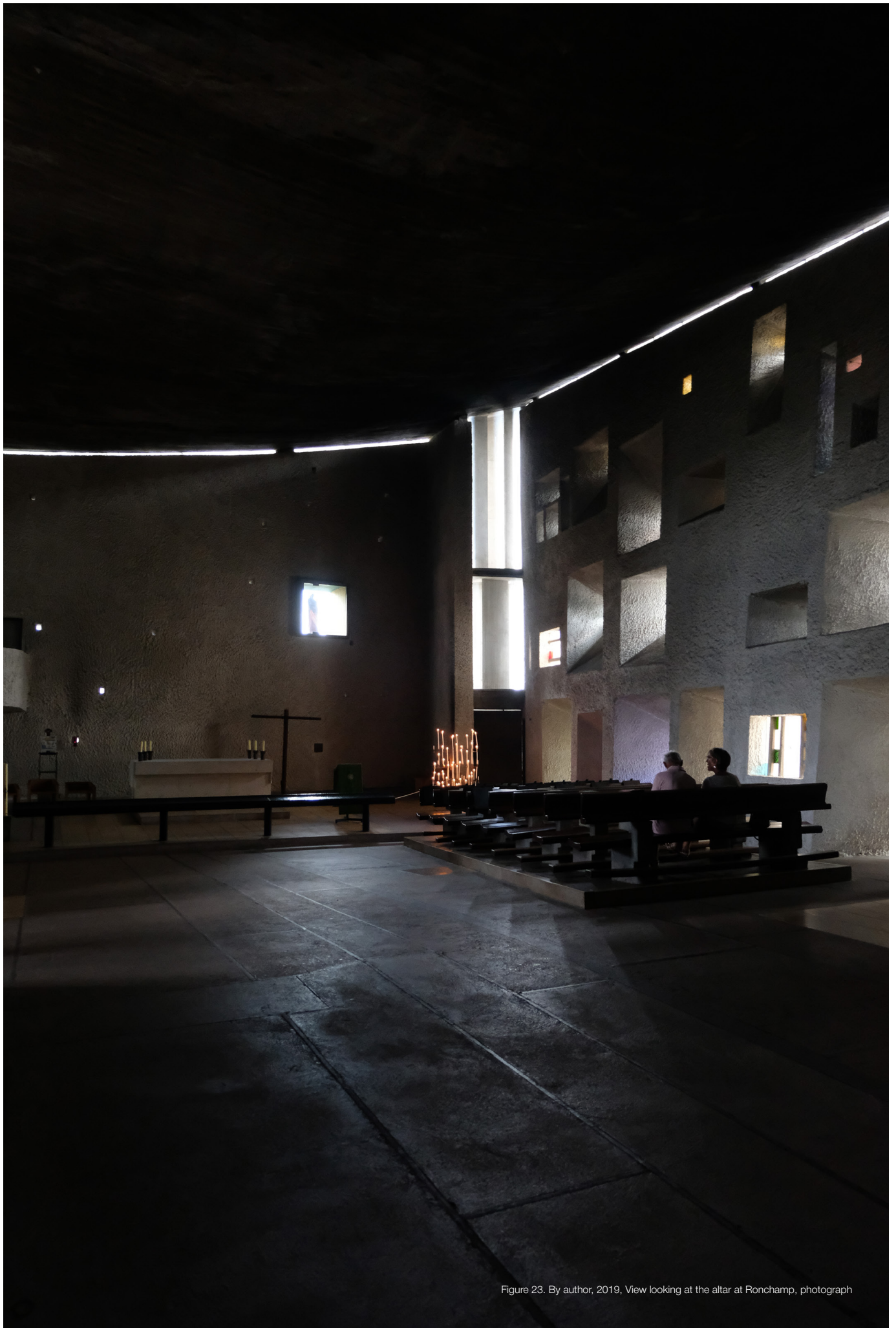


Figure 23. By author, 2019, View looking at the altar at Ronchamp, photograph

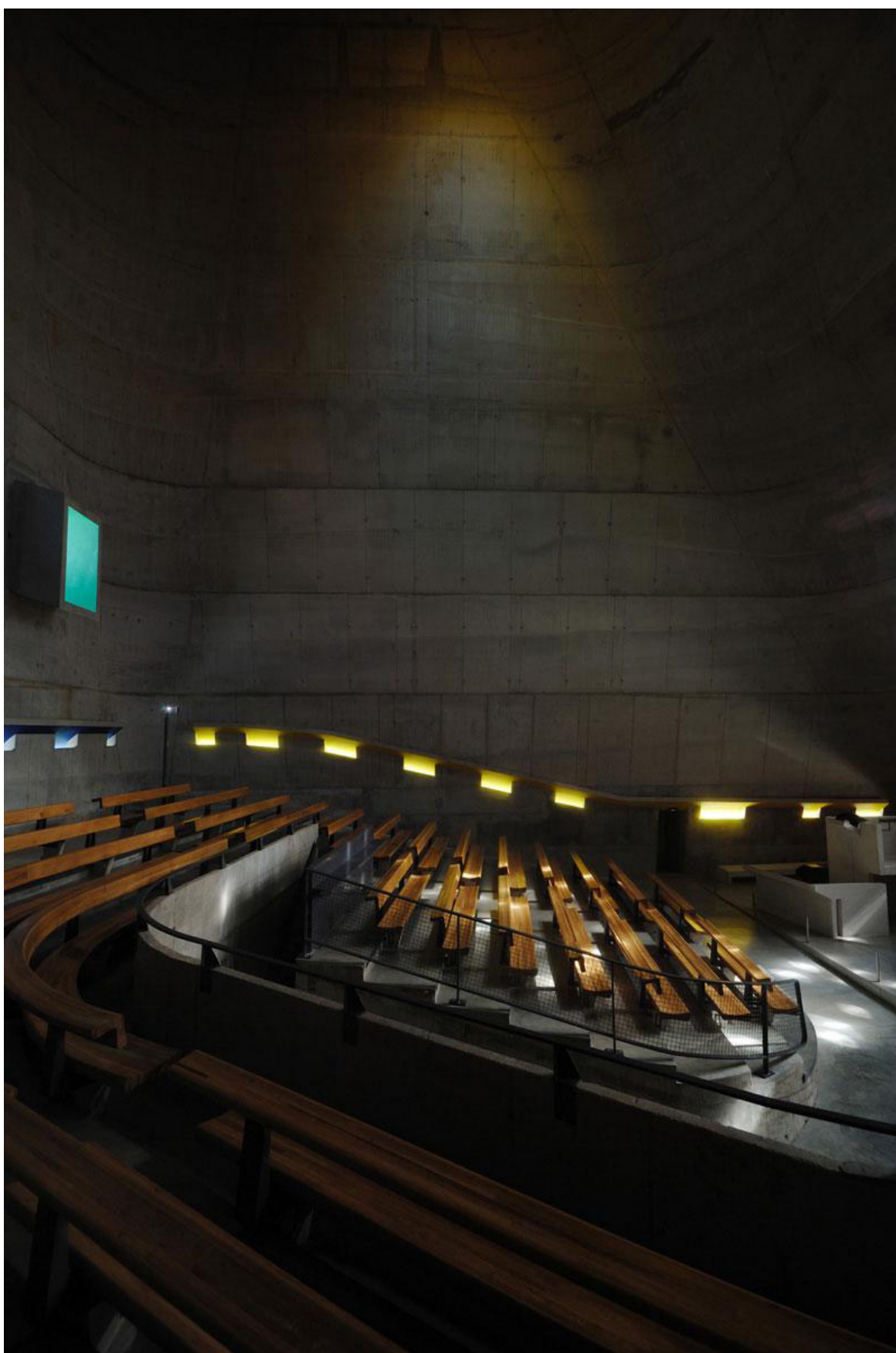


Figure 24. Michele Nastasi, St. Pierre interior, 2016, 2016, <https://divisare.com/projects/120561-le-corbusier-michele-nastasi-eglise-saint-pierre-firminy-france#lg=1&slide=9>.

St Pierre at Firminy is arguably even more elaborate in terms of its play and drama of natural light. Again, the building is perfectly aligned to true North allowing for a more accurate control of light. A major contributor to Firminy's atmosphere is its East façade. Due to the cone shape of the building, the upper part of the eastern wall is slanted at an angle. From the outside, it seems that it is merely just a solid wall, however from the inside it is clear that the wall is dotted with many small openings. The openings are round in shape and irregular in its placement, almost like the pattern of a star constellation in the sky. The round shape also has significant depth and is filled with acrylic keeping the water out of the building. These round opening does 2 things. The first is obvious and is one of the first things a visitor would notice entering the building: the openings let light shine through. In contrast to the dark interior church, the openings itself really shine, and in addition, depending on the time of day, it would also project the sunlight onto the floor of the church. When this happens, the wall and therefore the openings being at an angle to the direction of the incoming sunlight makes it not so obvious where the round balls of light on the floor is coming from, but its proximity to the source makes it easier to figure out.

The second phenomena that the openings creates is much more special. Due to the depth of the wall and therefore the acrylic, in addition to the round shape of the opening, in 3D, it results in a cylinder that is at an angle. When it approaches midday, and the sunlight is no longer able to have a direct path through the holes, it starts to hit the cylinder at an angle. When this happens, the cylinder reflects the sunlight and due to its round shape it becomes a band of light reflected as it interacts with the interior wall of the church. This phenomena is very apparent in the walls of the church. With the number of the openings and the scattered arrangement of the cylinders, it creates a dynamic atmosphere and feels alive. The experience I had having visited the church and staying in the space for a whole day is very special. It starts in the morning as dots of light on the floor, slowly moving around on the floor, then the mysterious band of light starts to show up and creeps on the wall as the dots start to fade. It has been speculated that Le Corbusier could not have envisioned this phenomena as the building was built after his death, however it is known that he encourages and delighted in 'accidents' in construction that contributed to the building.¹

During the summer, the sunlight would align with 2 light openings located up on the "roof" of the building. This happens at noon where the mysterious band of light would have disappeared, and the openings would have replaced it with a sharply defined beam moving in the interior of the church. Lastly in the evening the sunlight aligns with a square opening, filling it with warm light and projecting a warm beam against the multiple circular opening on the western wall that shined brightly at the start of the day, marking the end of the theatrics of light in the church. This dynamic design and consideration of the sun really connects St Pierre with not only the context of the site, but its place and relation to the cosmos, which really contributes to the making of a sacred space.

In all three churches, whenever it comes to the design of an element that will affect the way light enters the building, Le Corbusier always prioritises the nature of the resulting light instead of the form the building. This is refreshing to see as it is normally the opposite, where the architect has a form in mind and the quality of light that arises from it is an afterthought. In the three churches almost all of the interesting shape and the form of the building is a result of the pursuit of achieving a specific quality of light. This makes the space feel special as it is not an interesting form because of superficial reasons, it is an 'odd shape' because it is a raw and honest form which is only concerned on the atmosphere of the building. This 'courage' to dismiss the superficial concept of aesthetics or following a conventional shape, makes the building special not only because of the resulting space, but also provides weight and confidence in the design in the way that the experience created in the building is so special to the point that the architect even dismisses form, which is the quality that most people would associate architecture with.

1. Thomas Schielke, "Light matters: Le Corbusier and the Trinity of Light," ArchDaily, August 30, 2022, <https://www.archdaily.com/597598/light-matters-le-corbusier-and-the-trinity-of-light>.



Figure 25. By author, 2019, St Pierre waves of light, photograph

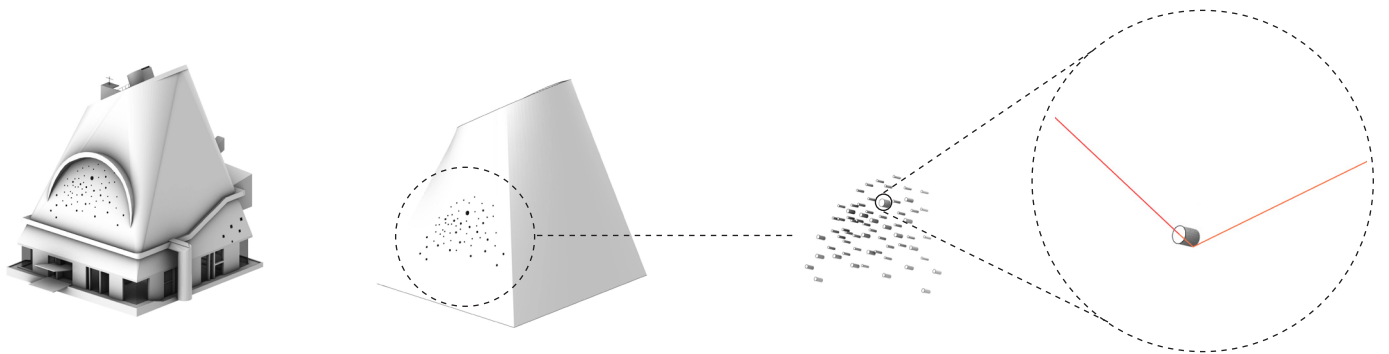


Figure 26. By author, 2019, St Pierre waves of light diagram, image

The diagrams show a speculation of how the bands of light that appear inside the church happen through the round openings located on the East facade of the building. The thick cylinder acrylic gets hit by the sunlight at an angle, which does not let light go through, and gets reflected partially by the acrylic and on to the interior walls of the church.

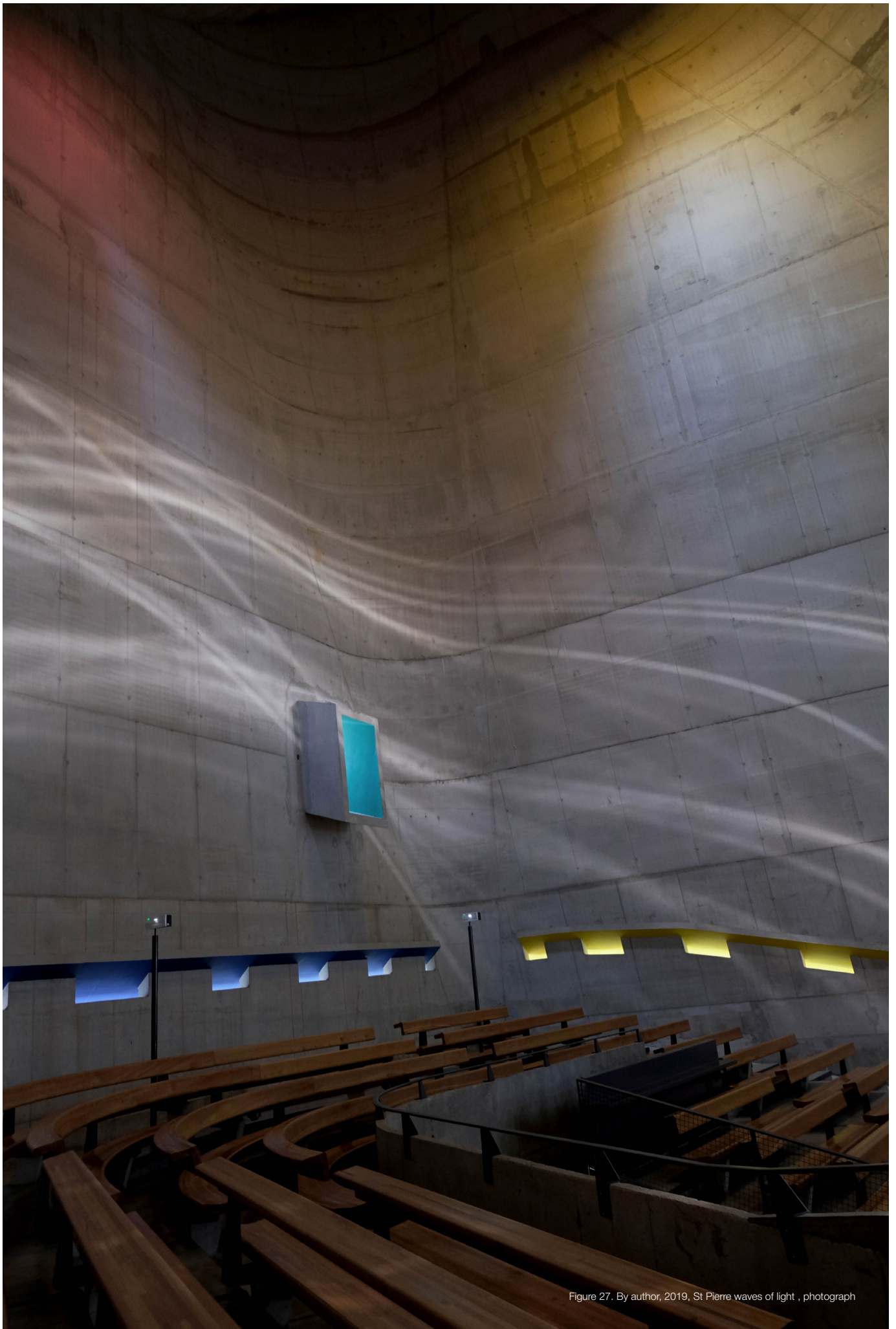


Figure 27. By author, 2019, St Pierre waves of light , photograph

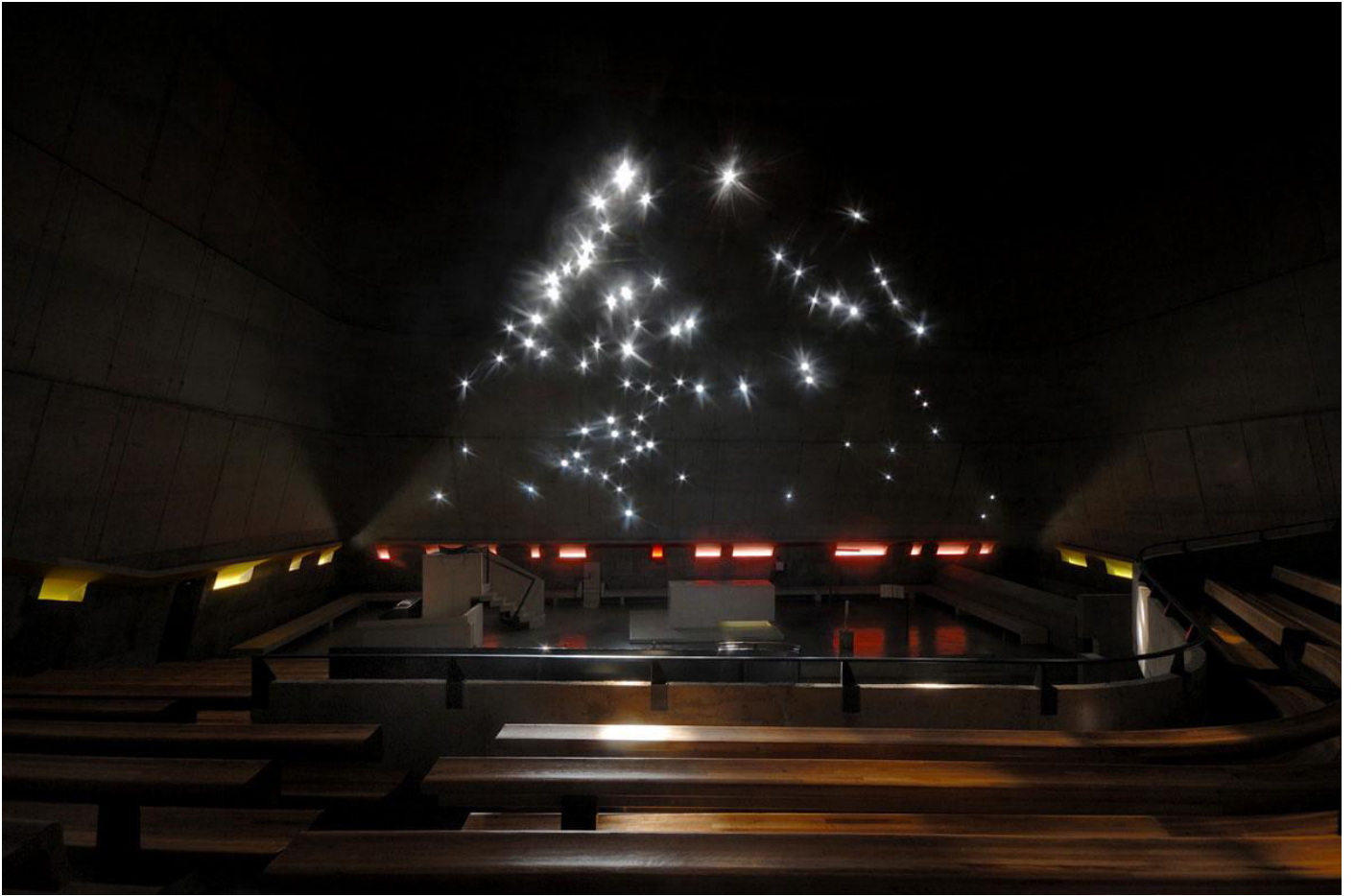


Figure 28. Michele Nastasi, St. Pierre interior, 2016, photograph, <https://divisare.com/projects/120561-le-corbusier-michele-nastasi-eglise-saint-pierre-firminy-france#g=1&slide=3>.

Figure 29. Henry Plummer, Western sunlight on altar wall at St. Pierre, 2011, photograph, https://www.archdaily.com/597598/light-matters-le-corbusier-and-the-trinity-of-light/54da5571e58ecec16000013-golden-light-on-alta?next_project=no.





Figure 30. By author, 2019,
Upward view from stair at St.
Pierre, photograph



Figure 31. By author, 2019,
Partial view at approach to
Ronchamp, photograph

In the case of creating a sacred space, there are many different factors at play simultaneously in order to achieve the emergent property of sacredness. For the purpose of this essay, the methods or tools used to achieve an effect will be referred to as architectural devices. In the case of the three churches that Le Corbusier built, natural light was one of the main architectural device with the largest contribution to creating this property. However there are also other devices at play as natural light on its own is not enough to create the atmosphere and background needed.

PROCESSION AND ROUTING

In a typical scheme it would be more relevant to talk about routing and the circulation inside building. However in the case of the 3 churches, the project was lucky enough to be able to afford to create a processional route for the approach of the users. Le Corbusier does this in his projects when he is able to (even in his residential project such as Villa Savoye). With Le Corbusier's projects when he refers to "Architectural Promenade" he is not only concerned about routing and circulation. Architectural promenade is a reference to Roman rhetoric where in each stage of the promenade prepares the visitor for the next, heightening their sense of expectation and curiosity.¹

At Ronchamp the design of the architectural promenade starts from quite a distance from the site where the building reveal itself as a white tower on top of a hill surrounded by trees. This was something I also experienced during my field research. The building shows itself from afar, even seen from the train station where I arrived at. Slowly as the site is approached, the building alternates from showing itself and disappearing, slightly becoming larger and changing its angle every time. The last partial reveal shows the iconic roof just before the building is fully visible. The next stage happens at the door to enter the building. After having looked at the complex and rich geometry and form of Ronchamp, the visitor is bought back to focus when walking through the simple wooden northern door. Again, on the inside is an intense experience, only this time it is the dazzling and multiple sources of filtered light. In terms of the architectural promenade, this is the stage where various options are presented and the users raise questions regarding the presented space. It is playful in nature and is sometimes a distraction from the main promenade and offers different sub-routes and sub-destinations to explore.² The next stage is the reorientation stage where the visitors find the east door close to the altar. The final stage is the culmination of Ronchamp where the user theoretically leave through the east door symbolising the death and resurrection of Jesus.³

La Tourette also has strongly defined architectural promenade designed by the architect. The first stage starts not visually but through sound from the belfry at the top of the chapel. The path for young friars and visitors to get to the site from the train station, when done on foot involves climbing a steep slope to the monastery. Approaching a row of trees, the visitor finally arrives at the site, greeted by the blank wall of the church. The second stage of the promenade, sensitising the user, happens at the free-standing portal built to Modulor proportion that defines a transition into an environment set out based on it. On the portal is also grating grills for cleaning shoes. However it only spans half the width of the portal, subtly but effectively dividing the entrance in two causing building users to enter single-file.⁴ The third stage of the promenade, the questioning stage, happens throughout the interior spaces of the building. Due to the nature of the building, being a monastery and having inhabitants in it, the target audience was designated to be the monks. As a result, there is no obvious pomp and ceremony in the architecture of this building on the dwelling section of the building. The rooms are designed to be ascetic for the monks. On the ground level, however, there are many different tangent and 'distractions' to explore the building instead of the main route that one could take. Arguably, however, the gravity point of the building is designed to be the church. This is also the circulation that (non-monk) visitors are allowed to partake in as I have experienced during my field research.

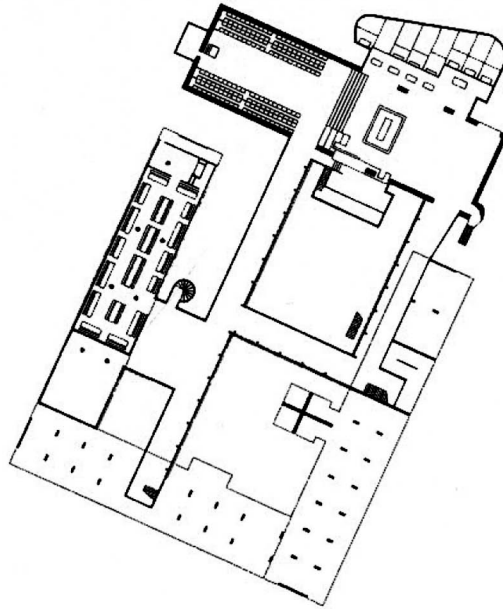
1. Flora Samuel and Inge Linder-Gaillard, *Sacred concrete: the churches of Le Corbusier*, 2013, 87.

2. Samuel and Linder-Gaillard, *Sacred Concrete: The Churches of Le Corbusier*, 94.

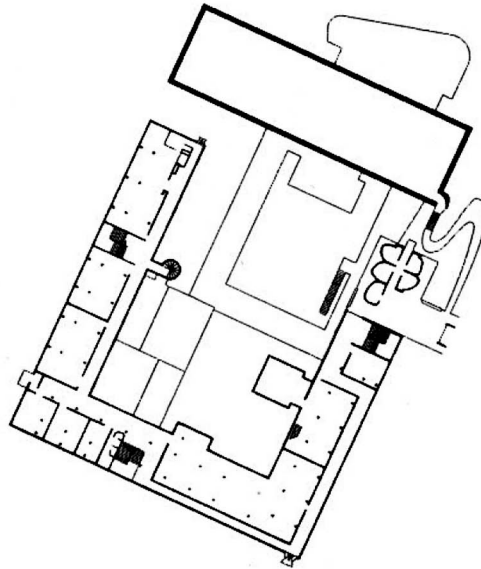
3. Samuel and Linder-Gaillard, *Sacred Concrete: The Churches of Le Corbusier*, 106.

4. Samuel and Linder-Gaillard, *Sacred Concrete: The Churches of Le Corbusier*, 136.

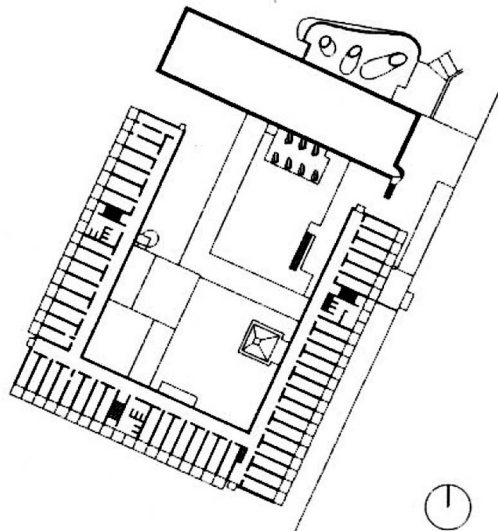
Figure 32. Henry Plummer and Le Corbusier, Cosmos of Light: the sacred architecture of Le Corbusier, 2013, 123, fig.1-3.



Lower level plan



Entrance level plan



Upper level plan



If the visitors are coming from the main stairs, the path to the church reveals itself somewhat as a surprise as visitors would have to turn a corner to find the main passage. Once revealed however, I found the circulation to the chapel to be dramatic. From the main stairs, the visitor walks straight through a corridor, which in plan could have been designed to lead directly into the refectory. However the architect intentionally misaligned the corridor in a way that the corridor from the main stair leads into somewhat a four way intersection. In section, the corridor from the main stairs ramp up until the intersection. Once there, to the right is the passage to enter the church. This passage, along with the ceiling, ramps down, making the whole circulation directionally very much pointing at the church. The ground levels out as users reach the entrance to the church, and the light as described in the earlier chapter comes into play. This descend and directionality however, creates a heavy, emotional, processional journey almost marking the transition into a different space, the church.

SENSORY DEPRIVATION

The final architectural device this essay will touch on is isolation and sensory deprivation. This is something that all three churches of Le Corbusier does quite prominently. Starting with each of the sites of the projects, they are all located in relatively small cities, and for La Tourette and Ronchamp, the exact location of the building requires traveling away from the city centre. Depending on the method of transportation, especially if done on foot, the experience of being on the site feels like having travelled somewhere far removed from the regular places one frequents in daily life. In addition to this, the building itself, when entering the main hall of the church, makes a separation between the outside and inside 'sensitising' the users and redirecting focus. This distinction contributes to the idea for the building user to be under the impression that they are currently in a liminal space and the world outside is far different from what happens inside the space.

Furthermore, as mentioned before, a common theme that the three churches share is the unconventional use of natural light. This requires the room to be dark in order for natural light to be presented the way it is in the three churches. Being in a dark space is also something that the body is not used to. In the dark, the slight primordial instinct insists that the body take precaution as it should be resting in a safe place at night. This, deprivation of the senses creates the increased awareness not usually present in everyday life. The unfamiliar situation, combined with the isolated location and the heightened focus all contribute to the idea of sacredness.

The last two architectural devices: scale and sensory deprivation in Le Corbusier's churches, are successful and can be registered by the users as special because of the previous knowledge and experience of the user. Previous knowledge and experience creates expectations when entering a space. Gaston Bachelard, mentions in his book *The Poetics of Space* that the house we are born in is psychologically special to us. It is the first reference and it is registered to be the ideal shelter. He also argues that all "inhabited spaces bears the essence of the notion of home".¹ With this, it can be argued that the first home is what is used as reference and what is expected when experiencing a new space. He writes "When we dream of the house we were born in, in the utmost depths of reverie, we participate in this original warmth, in this well-tempered matter of the material paradise. This is the environment in which the protective beings live."² The fact that the expectation of encountering a home-like space is never met in Le Corbusier's churches, in a way, suggests that being a space that is the 'opposite' of a home, in the sense that it is non-human scale, dark, unfamiliar, etc., actually contributes to the creation of a sacred space.

1. Gaston Bachelard, *The Poetics of Space* (Penguin, 2014), 5.
2. Bachelard, *The Poetics of Space*, 7.



Figure 33. By author, 2019, Ronchamp interior, photograph

REFLECTION

Having looked at Ronchamp, Firminy and La Tourette in the context of creating a sacred space, it can be concluded that the notion of sacredness, really is an emergent property. It is something that cannot be identified and dissected in a scientific method the way we would open the panel of a machine to look at which part is responsible for a certain property of a machine. This essay has attempted to do so, even using the works of an architect that is quite methodical and scientific in his approach in architecture. The chapters have pointed out the design moves that was made in the building, framing them as architectural devices that are deployed and examining them in terms of what contributions it makes to the creation of sacredness. However, despite all of this, in a way it is arguable that this essay merely points out some of the individual elements that needs to synthesise with each other. The synthesis of the elements and how these individual elements work together to lift up the spirit and whether or not it works every time is something that is beyond the scope of this essay and perhaps might not even be dissectible.

In the current climate, where the time and effort is spent for much more urgent issues in architecture, such as climate change, there is of course the question of even the need for the design of such spaces. Designing such buildings are difficult, especially with the diminishing significance of the architect in the built environment and the tendency of clients opting to build schemes through in house architecture department of the contractor. Buildings such as these are also not 'practical' in the sense it has no obvious, measurable, important use for society, in fact the opposite is true. There currently are a surplus churches in Europe that is empty due to the decline of faith, which need re-purposing.

However, I personally think that this type of architecture is something that we cannot measure the value of. It lies close to the culture and will be something that will be regretted later if overlooked and subtly let to fade. Returning back to the point of architecture being a blend of science and arts, I personally I feel that this phenomena of the presence of ineffable qualities of a space is truly architectural in nature. I think it lies very close to the essence of architecture. There is something very pure and honest about spaces that can be felt only by being present in it and not through descriptions or images.

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